

**Army Regulation 40-21**

**Medical Services**

# **Medical Aspects of Army Aircraft Accident Investigation**

**Headquarters  
Department of the Army  
Washington, DC  
23 November 1976**

**Unclassified**

# ***SUMMARY of CHANGE***

AR 40-21

Medical Aspects of Army Aircraft Accident Investigation

This is a transitional reprint of this publication which places it in the new UPDATE format. Any previously published permanent numbered changes have been incorporated into the text.

Effective 1 January 1977

Medical Services

**Medical Aspects of Army Aircraft Accident Investigation**

---

By Order of the Secretary of the Army:

**BERNARD W. ROGERS**  
*General, United States Army*  
*Chief of Staff*

Official:

**PAUL T. SMITH**  
*Major General, United States Army*  
*The Adjutant General*

---

**History.** This UPDATE issue is a reprint of the original form of this regulation that was published on 23 November 1976. Since that time, no changes have been issued to amend

the original. This reprint originally carried a cover date of 16 December 1987. To make this publication compatible with the Army electronic publishing database, an appendix of references was inserted as appendix A; the existing checklist appendix was changed to appendix B and paragraphed accordingly.

**Summary.** This revision of AR 40–21 updates information and provides a mechanism for additional air medical support from Armed Forces Institute of Pathology (AFIP).

**Applicability.** See paragraph 2.

**Proponent and exception authority.** Not applicable

**Army management control process.** Not applicable

**Supplementation.** If supplements are issued, Army Staff agencies and major Army

commands will furnish one copy of each to The Surgeon General HQ DA (DASG–HCH–O) WASH, DC 20310; other commands will furnish one copy each to the next higher headquarters.

**Suggested Improvements.** The proponent agency of this regulation is the Office of The Surgeon General. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to HQDA(DASG–HCH–O) WASH DC 20310.

**Distribution.** Active Army, A; ARNG, B; USAR, D.

---

**Contents** (Listed by paragraph and page number)

- Purpose • 1, *page 1*
- Scope • 2, *page 1*
- Responsibilities • 3, *page 1*
- Checklist for medical information on aircraft accidents • 4, *page 1*
- Preparation of reports • 5, *page 1*
- Consultation with Aerospace Pathology Branch pathologists • 6, *page 1*

**Appendixes**

- A.** References, *page 2*
- B.** Checklist for Medical Information on Aircraft Accidents, *page 2*

---

\*This regulation supersedes AR 40–21, 31 July 1973.

**RESERVED**

## 1. Purpose

This regulation prescribes policies and general administrative responsibilities for conducting medical investigations of Army aircraft accidents. These provisions are an integral part of the general investigation (AR 95-5) convened under provisions of chapter 4, AR 385-40. Additionally, regulation implements NATO STANAG 3318.

## 2. Scope

This regulation is applicable in all commands of the Army.

## 3. Responsibilities

*a. Commanders.* Major commanders will insure compliance with these provisions.

*b. Surgeons.* The surgeon of the Army installation located nearest the scene of an Army aircraft accident will—

(1) Arrange for pathologic and photographic coverage of medical aspects as expeditiously as possible.

(2) In the event a pathologist or photographer cannot be provided for the installation concerned, contact the surgeon of the appropriate major command by telegraph or telephone to provide pathologic or photographic coverage. Pathologists or photographers will be furnished transportation to the scene of the accident by the quickest means.

*c. Flight surgeon.* The flight surgeon assigned to an aircraft accident investigation board (AR 385-40) will—

(1) Make a thorough investigation of the accident, including the medical, psychic, social, economic, and training history of the individuals involved, to discover which factors may have contributed to the accident.

(2) Make a thorough investigation of the fatal and nonfatal injuries sustained to determine their causes and to recommend ways of preventing or minimizing recurrence.

(3) Correlate the factors causing accident and injury with safety aspects of aircraft design, restraint system design, personal equipment, and existing operational and safety regulations practices, and conditions with other members of the aircraft accident investigation board.

(4) Evaluate life support and personal protective equipment which is in any manner implicated in the cause or prevention of injury. Insure that such equipment is forwarded with all components by the accident investigation board president to the Commander, US Army Aeromedical Research Laboratory, P.O. Box 577, Ft. Rucker, AL 36362.

*d. Pathologist.* The pathologist will—

(1) Conduct a complete postmortem examination utilizing photographic and radiographic documentation on all crewmembers of the aircraft. Autopsy on air crewmembers of Army aircraft is mandatory. Procedures for obtaining authorization for autopsy of non-aircrew personnel are outlined in AR 40-2. External examination of passengers with description and photographs of trauma is of great value in correlating cause of death and passenger cabin equipment failure.

(2) Recover necessary tissue for both toxicological and fixed tissue preparations.

(3) Following autopsy, prepare, as directed in chapter 4, TM 8-300, tissue for shipment to Director, Armed Forces Institute of Pathology, WASH DC 20316 for toxicologic analysis. Tissue for histological studies should be prepared at the nearest Army area or hospital laboratory. The microscopic examination should also be accomplished at the local level. The autopsy protocol will be prepared on DD Form 1322 (Aircraft Accident Autopsy Report), using SF 503 (Clinical Record—Autopsy Protocol) for ancillary data as well as the microscopic examination.

(4) After completion of the autopsy and an analysis of all available information obtained from X-rays, photographs, toxicological studies, and fixed tissue preparations, submit report (3) above to the flight surgeon assigned to the aircraft accident investigation board with appropriate comment on the following considerations:

(a) Human factors associated with the cause of the accident,

including pre-existing disease conditions which may have contributed to the cause of the accident.

(b) Analysis of the injuries sustained by the pilot, crewmembers, and passengers which could have been prevented by proper crash safety design and components.

(c) Recommendations to the aircraft accident investigation board for the prevention of similar accidents and injuries.

(5) In the near fatal accidents resulting in serious injury which may result in death at a later date, visit the scene of the accident and conduct a detailed study to correlate injury and causative factors.

(6) Following completion of the study in (5) above, submit a narrative report to the flight surgeon assigned to the aircraft accident investigation board.

(7) Forward within 96 hours autopsy protocol, slides, blocks, and tissues to the Director, Armed Forces Institute of Pathology. Also include photographs and/or transparencies of the deceased and the accident scene, pertinent X-rays (these will be returned to the preparing medical facility after review by the AFIP), and one copy of Flight Surgeon's Technical Report of US Army Aircraft Accident, Part XII—Medical Information, DA Form 2397-11 (RCS: CSOIG-12).

*e. Photographer.* The photographer will make photographic prints and transparencies of the aircraft and the personnel involved, including color photographic prints when they will help the pathologist.

## 4. Checklist for medical information on aircraft accidents

The checklist in the appendix implements STANAG 3318 and lists minimum information required for a satisfactory medical investigation of Army aircraft accidents. Checklist will not be reproduced locally, but will be used as a guide.

## 5. Preparation of reports

The information contained in the reports required by this regulation will be utilized by the flight surgeon as a member of the Army Aircraft Accident Investigation Board in the preparation of DA Form 2397-11 (Technical Report of US Army Aircraft Accident, Part XII, Medical Information). The Aircraft Accident Autopsy Report (DD Form 1322) and photographs of deceased personnel will be forwarded to the Commander, USAAVS, ATTN: IGAR-M, Fort Rucker, AL 36362. The autopsy report and photographs will not accompany the DA Form 2397, which will be forwarded in accordance with paragraph 4-3, AR 385-40.

## 6. Consultation with Aerospace Pathology Branch pathologists

Consultation with the staff of the Aerospace Pathology Division, AFIP, may be obtained by calling commercial AC 202-576-3232, or AUTOVON 291-3232.

## Appendix A References

### Section I Required Publications

This section contains no entries.

### Section II Related Publications

This section contains no entries.

## Appendix B Checklist for Medical Information on Aircraft Accidents

### Part A—Identification

1. Name of casualty.
2. Branch of service.
3. Number and grade.
4. Age.
5. Functional status in aircraft.

### Part B—Information Relative to Accident

1. Type and number of aircraft.
2. Estimated altitude and speed before and at emergency.
3. Weather conditions.
4. Pertinent information relative to airfield or site of accident.
5. Radio contact, nature and time.
6. Nature of accident.
7. Time of accident.
8. Speed and angle of impact.
9. Severity of damage to aircraft and accident site.
10. State causes of accident.

### Part C—Information Relative to Escape

1. Position of casualty at time of impact (in seat, in fuselage out of position, thrown clear, using escape apparatus).
2. Escape attempted (in air, on ground).
3. Escape apparatus (type, ejection seat, manual, partially automatic, fully automatic, delay, parachute, barostat control, no parachute).
4. Escape apparatus used (satisfactory, not used, not applicable, unsatisfactory).

### Part D—Medical History of Crewmember

#### 1. Physical.

- a. Last medical examination (date, classification, restrictions).
- b. Toxic hazards (in flight, before flight, to include number of days before flight) (inhaled, ingested, by skin).
- c. Diseases (in flight, before flight, to include number of days before flight), (infections, latent condition unknown).

#### 2. Mental.

- a. Fitness for flying, restrictions.
- b. Changes in behavior, unusual activity (quiet, drinking, smoking, eating, missing meals, sleeping, waking, careful, careless, forgetful, misjudgment, errors) (before flight to include number of days before flight).
- c. Worries (only when of acute character, financial, social, marital, family, job, private).

#### 3. Flying experiences.

- a. Total number of flying hours.
- b. Number of hours on type.
- c. Number of hours in past 6 months; 7 days.
- d. Type of flying (transport, bomber, fighter, general, war, or peace).
- e. Average duration of sorties.

- f. Maximum height and duration.
- g. Any previous accidents.

### 4. Ground training.

Procedural drills and performance during the previous 12 months.

### Part E—Information on Injuries Sustained in Accident

1. Length of survival following accident.
2. Date and time of death.
3. Exposure of body to fire before accident/impact, fire after impact, air, mud, dirt, fuel, etc.
4. Length of time exposed.
5. Position and distance of body or fragments with respect to aircraft wreckage.
6. Injuries (head, face, neck (throat), shoulders, back, chest, abdomen, pelvis, arms, legs, hands, feet).
7. Cause (fire, propellants, hydraulic fluids, and other substances).
8. Cause (by impact against aircraft structures—descriptions, or by impact against other structures—description).
9. Injuries (preceding the accident, aggravating the accident, by first impact, by subsequent and final impacts).

### Part F—Post-Accident Examination and/or Autopsy

1. No incapacitating diseases revealed.
2. Incapacitating abnormalities cannot be excluded (described possible form of acute incapacity, pain localization, unconsciousness, vertigo, etc.).

### Part G—Conclusions

1. The above mentioned conditions are/are not considered to have caused or aggravated the accident (description, if applicable).
2. The above mentioned conclusions give rise to the following suggestions for preventive action (list).

**Unclassified**

PIN 031583-000